REMARKS

Favorable reconsideration and allowance of this application are requested.

1. Request for Continued Examination

As a procedural note, the present amendment is being filed concurrently with a formal Request for Continued Examination (RCE) under 37 CFR §1.114. Accordingly withdrawal of the "finality" of the October 6, 2009 Official Action is in order so as to allow entry and consideration of the amendments and remarks presented herewith.

2. Discussion of Amendments

By way of the amendment instructions above, the pending claims have been further amended so as to clarify the same. In this regard, a typographical error with respect to the cone angle that was inserted into pending claim 1 has been correct to read 8-75° as supported by original claim 3 and page 3, lines 34-35 of the specification.[1]

In addition, claim 1 has been amended so as to include therein the substance of prior claim 9. As such, claim 9 has been canceled.

Therefore, following entry of this amendment, claims 1-8 and 10-15 will remain pending herein for which favorable reconsideration and allowance are solicited.

3. Response to Claim Objections

The amendment presented above with respect to the cone angle recited in pending claim 1 is believed to address the Examiner's objections with respect to claims 4, 11 and 13.

[1] The comments on page 5, line 6 under the heading "Discussion of Amendments" should likewise be viewed as stating a cone angle of 8-75°.

Pending claims 1-15 are believed to address all of the noted objections noted by the Examiner as well as the informalities which formed the basis of the rejection of claims 3, 7-11 and 13 under 35 USC §112, 2nd ¶. Withdrawal of the same is therefore believed to be in order.

4. Response to 35 USC §103(a) Rejections

The Examiner persists in her election of prior claims 1-15 under 35 USC §103(a) as allegedly being "obvious" and hence unpatentable over Kavesh (USP 6,448,359) in view of Chau (USP 5,296,185).

As will become evident from the following discussion, the rejection advanced on the basis of Kavesh and Chau is inappropriate against the presently pending claims. Specifically, applicants note that the presently claimed invention is distinguishable over Kavesh and Chau for at least the following reasons: (a) spinneret geometry and (b) draw ratio.

(a) Spinneret Geometry

Kavesh discloses a method of preparing multi-filament yarns, comprising the steps of: extruding a solution of polyethylene and solvent through a multiorifice spinneret into a cross-flow gas stream to form a multi-filament fluid product, stretching the multifilament fluid product, quenching the fluid product in a quench bath to form a gel product, stretching the gel product, removing the solvent from the gel product to form a xerogel product and stretching the xerogel product.

Kavesh indicates that the draw ratio in and the dimension of the air-gap are critical parameters that determine properties of the filaments and yarn. No mention is made on controlling the draw ratio *in the spinholes*. The drawback of the Kavesh process is that small variations in air-gap draw ratio and dimension will result in process instabilities.

In contrast, the present invention employs a spin hole having a geometry comprising a contraction zone, with a gradual decrease in diameter from diameter D_0 to D_n with a cone angle in the range 8-75°. Such a spinhole geometer allows drawing to be achieved *in the spinhole*. Moreover, the draw ratio in the spinhole can be much better controlled as compared to the draw ratio of the drawing in air (i.e., as proposed by Kavesh). This better draw ratio control in turn allows for the fluid draw ratio DR_{fluid} to be better controlled as compared to drawing only in the air gap (i.e., as proposed by Kavesh).

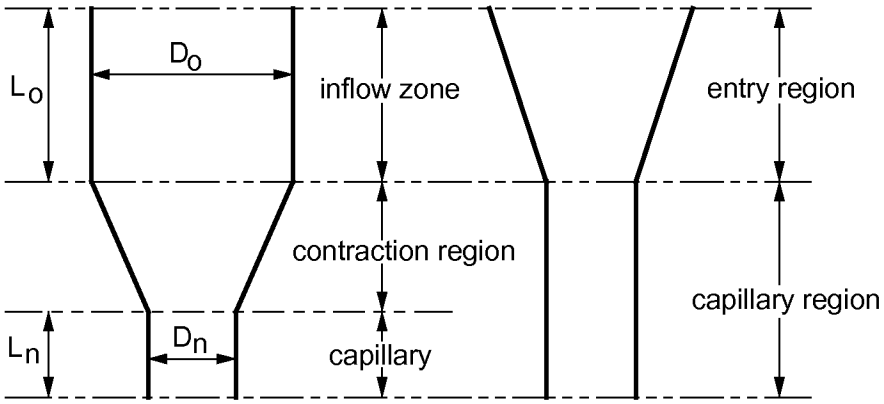
Kavesh does not provide any hint at controlling DR_{fluid} by controlling the dimensional geometry of the spinhole. In addition, no spinhole is in fact disclosed in Kavesh having a contraction zone with a gradual decrease in diameter from diameter D_0 to D_n with a cone angle in the range 8-75°.

In this regard, the examiner's attention is drawn to Figure 2 of Kavesh and the text describing Figure 2 at column 4, lines 48-55 therein. As noted, the spinneret hole has a ***tapered entry region*** and a ***capillary region of constant cross section***. When the ordinarily skilled person reads an entry region, he would not understand it as the contraction zone as is defined in the applicants' pending claim 1. Instead, the ordinarily skilled person would understand that reference to an "entry region" mean a region for the spinning solution to enter the region from which the spinning solution is extruded, i.e. the capillary region downstream of the entry region.

The entry region referred in Kavesh is only mentioned as "tapered". There is no teaching or suggestion for actually drawing of the UHMWPE in such region. This is further evidenced by the fact that there is no mention made of the angle of the taper, in contrast to the detailed description of the dimension of the capillary region. This really is not a surprise since, as noted above, an ordinarily skilled person would recognize that the actual region which extrudes the spinning solution is the capillary region, and not the entry region. From Kavesh, therefore, the ordinarily skilled person would not be taught to make a ***contraction zone for the purpose of drawing*** the UHMWPE as is defined

in applicants' pending claim 1. Moreover, such a person would not therefore specifically choose the cone angle of the contraction zone to be within the range of 8-75°.

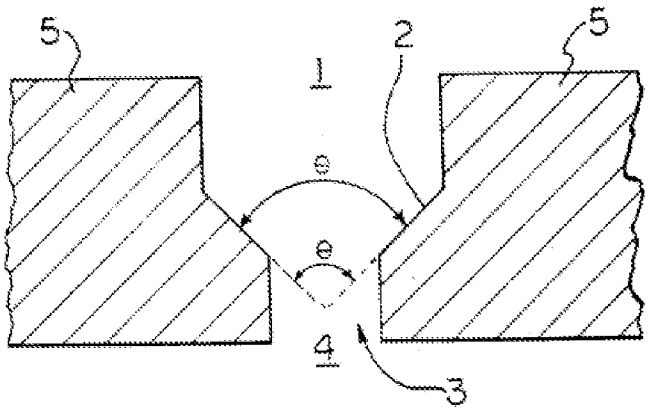
A drawing is shown below to further illustrate the structural differences between the presently claimed invention and Kavesh:



Present invention KAVESH

As is illustrated above, the spinplate of Kavesh does not have a contraction region as is defined in the pending claims herein -- it only has an entry region.

The Examiner apparently recognizes this deficiency in Kavesh as the secondary reference to Chau has been cited to allegedly show an inflow zone of diameter D_o. Chau discloses a spinneret having the following cross-sectional configuration:



And wherein the depicted structures consist of:

(a) an inlet (1)
(b) optionally, a transition cone(2) where the hole narrows by an angle (θ) before entry into a capillary section,
(c) a capillary section (9), which is the thinnest (smallest-diameter) section of the hole where the walls are about parallel, and
(d) an exit (4).
The inlet may optionally have a counterbore, which may optionally be concave upward or concave downward or a fixed angle.

Applicants note that an ordinarily skilled person would not arrive at the presently claimed invention following a combination of Kavesh and Chau. The spinplate of Kavesh already has an inlet zone, and therefore the skilled person would not be prompted to further add an inlet zone. Furthermore, Kavesh is completely silent about the inlet except for the requirement that it has to be tapered.

The skilled person could not arbitrarily modify the inlet of Kavesh to also have the inlet (1) of Chau upstream of the inlet of Kavesh. If Chau is combined with Kavesh, the skilled person would have to replace the inlet of Kavesh with the inlet of Chau. This would result in a spinplate comprising an inlet having a constant diameter and a capillary region (which also has a constant diameter).

Moreover, the examiner alleges that Chau discloses inlet zones for the purpose of effectively transitioning to the capillary section. However, the passage in Chau referred by the examiner (column 5, lines 31-40) does not state that inlet zones are provided for the purpose of effectively transitioning to the capillary section. In fact, Chau is completely silent about the purpose of the inlet zones throughout the document.

Applicants likewise note that Chau discloses a ratio of Lo/Do which is <1 – ***not*** at least 5 as claimed herein. In this regard, while Chau does not disclose explicitly the

dimension of the inlet, Fig. 1 of Chau does clearly shows that the diameter Do of the inlet is larger than the length Lo of such inlet. In fact, the diameter Do of the inlet (1) of Chau appears to be about twice as large as the length Lo of the inlet (1). Therefore, even if Chau's inlet (1) were to be provided in the Kavesh spinneret, the presently claimed invention would not result.

It is clear therefore that there is no suggestion in Kavesh or Chau to modify the inlet of Kavesh in such a way that the inlet of Chau is added upstream of the inlet of Kavesh in order to achieve the presently claimed invention.

(b) Draw Ratio

Kavesh is silent about the draw ratio $DR_{fluid} = DR_{sp} \times DR_{ag}$ being at least 50. The comparison of the experiments according to the present invention and the results of Kavesh as illustrated in Fig. 1 of the subject application, clearly shows the advantage of the present invention which is not suggested or even remotely taught by Kavesh.

In this regard, the Examiner will recall that the data in Fig. 1 of the subject application which replicates the Kavesh spinneret yielded a maximum value of DR_{fluid} of 33.8 – ***not*** a minimum of at least 50 as required by the pending claims herein. As described in the specification as originally filed on page 4, line 32 through page 5, line 2, the DR_{fluid} of Kavesh was presumed to be equal to DR_{ag} because the DR_{sp} is considered to be 1. The entry region of the spinneret in Kavesh is not the contraction zone that induces the DR_{sp}.

Therefore, one advantage of the present invention which is evident from the data of Fig. 1 in comparison with Kavesh is that improved processing stability and less filament breakage ensues which in turn results in yarns of more uniform and improved quality.

Chau also does not disclose a fluid draw ratio $DR_{fluid} = DR_{sp} \times DR_{ag}$ of at least 50. Nor would such a high DR_{fluid} be expected given the geometry of the inlet (1) as discussed above.

Thus, the pending claims herein are patentably *un*obvious over Kavesh alone or taken together with Chau. Withdrawal of all rejections under 35 USC §103(a) is therefore in order.

5. Fee Authorization

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140.

Respectfully submitted,

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